

USSN 10/029,319
Atty Docket No. 2001-0095-04**Remarks**

Claims 1-6 and 9-19 are pending in the above captioned application. Claims 1-6 and 9-19 stand rejected. New claim 20 has been added.

The Examiner is respectfully requested to withdraw the rejections of claims 1-6 and 9-19 and allow claims 1-6 and 9-19 and also to allow new claim 20.

Claims 1-6 and 9-19 stand rejected under 35 U.S.C. §103 (a) as unpatentable over United States Patent No. 6,034,984, entitled TANGENTIAL FAN WITH CUTOFF ASSEMBLY AND VIBRATION CONTROL FOR ELECTRIC DISCHARGE LASER, issued to Hofmann, et al. on March 7, 2000, based upon an application, Ser. No. 09/310,786, filed on May 12, 1999, and assigned to the assignee of the above captioned application ("Hofmann") in view of United States Patent No. 5,770,933, entitled BLOWER MOTOR WITH ADJUSTABLE TIMING, issued to Larson, et al. on June 23, 1998, based upon an application Ser. No. 969,387, filed on November 13, 1997, and assigned to the assignee of the above captioned application ("Larson").

The Examiner has taken the position that Hoffman shows all of the claimed features except for pulse repetition rates of greater than 3700 Hz and that:

Larson et al. teach in column 3, lines 26-38 that achieving high repetition pulse rates is dependent upon high rotation of the fan. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the high rotation rate of the fan to produce a high pulse repetition rate, as taught by Larson et al. ...

In the portion of Larson to which the Examiner refers Larson notes:

In an excimer laser, the pulse rate is typically quite low. If the gas is static, the gas volume within the discharge area must be given sufficient time to return to its initial thermal state between laser pulses. Generally this return time is on the order of one second, thus limiting the pulse rate in a static gas system to approximately 1 pulse per second. If the gas is circulated the pulse rate can be increased. The repetition rate at which the laser can be discharged depends upon the circulation velocity and the rate at which the gas volume within the discharge

volume is exchanged. Thus, the higher the circulation velocity, the higher the achievable repetition rate.

In a laser system such as that illustrated in FIG. 1, gas is circulated throughout cavity 100 following gas flow lines 119. A fan 121, comprised of a plurality of fan blades 123 extending parallel to a fan axis 125, force the circulation of the gas along flow lines 119. After the gas has been excited in discharge area 111, the circulating gas is cooled using a heat exchanger 127. The directional flow of gas is controlled using one or more control vanes 129. Optionally, a portion of the circulating gas can be siphoned off for purification with a filter (not shown), thus extending the life of the gas contained within cavity 100.

This teaching of Larson is clearly in regard to maintaining sufficient gas flow and cooling capacity to return the circulating gas to its initial thermal state before being subjected to another discharge between the discharge electrodes. It is well known that the more gas circulated and cooled, i.e., the higher the fan speed and the more efficient the fan and the cooling system, the higher the rate at which the gas discharge laser can be efficiently discharged.

Larson does not address, and therefore does not propose any solution to, the problem addressed by the inventions in the above captioned application. Applicants have discovered that in gas discharge lasers, e.g., excimer lasers, at high repetition rates, e.g., above 3700 Hz suffer from bandwidth distortions and that a solution to that problem is, in part, using a transverse fan of a particular construction, as disclosed and claimed.

The combination of Hoffmann and Larson does not teach or suggest this invention to one of ordinary skill in the art. The nature of the problem and the solution to the problem are only taught by applicant's disclosure in the above captioned application.

For the above states reason, the Examiner's rejection of claim 1 is not proper and the Examiner is respectfully requested to withdraw the rejection of claim 1 and allow claim 1.

The remaining claims 2-6 and 9-19 depend from claim 1 and should be allowable along with claim 1. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

USSN 10/029,319
Atty Docket No. 2001-0095-04

In addition, as to claims 11-14 Hofmann teaches offsetting the blades in different segments by different angles but not asymmetric placement of blades within a segment. For this reason the combination of Hofmann and Larson does not create a *prima facie* case for obviousness which requires that the combination result in all of the claimed elements.

In addition, as to claims 10, 16 and 17 the Examiner has stated that it would be obvious to "discover an optimum value of a result effective variable"

Applicants submit that there is nothing in the record which supports the Examiner's contention that either the "specific radii" or "origin of said circle cross section" as claimed is a "result effective variable" in the sense of the holding in *In re Boesch*, 617 F. 2d 272, 205 U.S.P.Q. 215 (C.C.P.A. 1980).

In *Boesch* a claimed alloy was found obvious over a combination of two references showing "alloys having compositional limits overlapping those of the claimed alloys." *Boesch*, 617 F. 2d at 275 The Board found this to be a *prima facie* case for obviousness and the C.C.P.A. agreed. The applicant argued that its alloy was composed of the constituent metals selected according to a value of N_v for the alloy in order to avoid brittleness. The C.C.P.A. noted that it was very well known in the art that:

the higher the N_v value of a Co-Cr- Ni alloy, the higher the chance for precipitation of embrittling phases; also, that the quantities of metals consumed in precipitation did not enter into calculating the N_v value of an alloy matrix. We are persuaded that one of ordinary skill in the art would have been guided by these principles.

The C.C.P.A. concluded:

the prior art would have suggested 'the kind of experimentation necessary to achieve the claimed composition, including the proportional balancing described by appellants' N_v equation.' This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (Cust. & Pat.App.1977); *In re Aller*, 220 F.2d 454, 42 CCPA 824, 105 USPQ 233 (1955). Accordingly, we conclude that a *prima facie* case of obviousness has been established.

USSN 10/029,319
Atty Docket No. 2001-0095-04

Thus, in *Boesch* the prior art taught what the result effective variable was and that it was a single variable.

Nothing of the sort exists in the present case. Indeed, applicants assert, and the Examiner has no evidence in the record to the contrary, that the operating environment within a gas discharge laser, e.g., an excimer laser, and particularly as discharge repetition rates increase, e.g., to relatively very high levels, e.g., above 3700 Hz, and concomitant fan speeds increase, the result is problems, the solutions to which involve addressing and experimenting with numerous variables. Unlike in *Boesch*, this involves "many result effective variables," and applicants also assert that these variables are often interactive with each other, and not simply the optimization of "a result effective variable."

In re Lee, 277 F.3d 1338, 1345, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002) and *In re Thrift*, 298 F.3d 1357, 1362, 63 U.S.P.Q.2d 2002 (Fed. Cir. 2002) require the Examiner to establish in the record a basis for an obviousness rejection.

For the above stated reasons, the Examiner's rejection of claims 10, 16 and 17 is not proper and the Examiner is respectfully requested to withdraw the rejection of claims 10, 16 and 17 and allow claims 10, 16 and 17.

Claims 2-6, 9, 11-15 and 18-19 depend from allowable claim 1 and should be allowed for that reason. *In re Fine*, 837 F. 2d. 1071, 5 U.S.P.Q. 1596 (Fed. Cir. 1988).

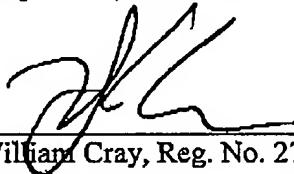
For the above stated reasons the Examiner is respectfully requested to withdraw the rejections of claims 1-6 and 9-19, and allow claims 1-6 and 19.

USSN 10/029,319
Atty Docket No. 2001-0095-04

Claim 20 has been added to claim an aspect of the present invention not previously claimed. An embodiment of the present invention is discussed in the Specification at p. 8, lines 3-6, and is specifically claimed in new claim 20. The invention as claimed in new claim 20 is not taught or suggested by the art relied upon by the Examiner, i.e., the combination of double helical blades forming alternating fan blade sections where the sections form "sequential fan blade segments of the same helix pattern randomized to not be in helical alignment."

Applicants authorize the Commissioner to charge \$110.00 to our Deposit Account No. 03-4060 for the one-month extension of time fee. Applicants do not believe any other fees are due however, if any additional fees are due, authorization is hereby given to charge our Deposit Account the appropriate amount.

Respectfully submitted,


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September 11, 2003
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